Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Introduction to Laser Physics	FZK479	7. Semester	3 + 0	3.0	7.0

Prerequisites	None
Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Mustafa KURT
Instructors	Assist. Prof. Dr. Mustafa KURT
Assistants	
Course Objectives	Fundamentals of laser light, the nature of light, the origin of light, laser action, optical resonator, population inversion mechanism, absorptions and emissions are understood.
Course Content	1 : The Nature of Light 2 : The Origin of Light 3 : Amplification of light 4 : Laser Action 5 : Laser Gain 6 : Optically active materials 7 : Component of lasers 8 : Optical Resonator 9 : Cavity Threshold 10 : Population Inversion 11 : Laser Output 12 : Properties of Lasers 13 : Types of lasers 14 : Semiconductor Lasers
Course Learning Outcomes	1) explain Properties of light and laser light 2) define light sources and optically active medium. 3) capable of solving the Einstein coefficient any laser active materials. 4) solve the laser gain coefficient for any laser system. 5) design any resonator and calculate the laser modes. 6) define the principles of population inversion and calculate the gain. 7) classify the laser and understand working principals each of them.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Nature of Light	Instruction, Slayt presentation	
2. Week	The Origin of Light	Instruction, Slayt presentation	
3. Week	Amplification of light	Instruction, Slayt presentation	
4. Week	Laser Action	Instruction, Slayt	

Quick Access

Physics
Qualification Awarded
Level of Qualification
Qualification Requirements and Regulations
Specific Admission Requirements
Recognition of Prior Learning
Profile of the Program
Program Key Learning Outcomes
Occupational Profile of Graduates
Access to Further Studies
Course Structure & Credits
Exam Regulations & Assessment & Grading
Graduation Requirements
Mode of Study
Programme Director(or Equivalent)
Evaluation Questionnaire
TYYÇ

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Assessment
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CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
ECTS credits and course workload

		presentation	
5. Week	Laser Gain 1	Instruction, Slayt presentation	
6. Week	Laser Gain 2	Instruction, Slayt presentation	
7. Week	Optically active materials	Instruction, Slayt presentation	
8. Week	Optically active materials	Instruction, Slayt presentation	
9. Week	Component of lasers	Instruction, Slayt presentation	
10. Week	Optical Resonator	Instruction, Slayt presentation	
11. Week	Cavity Threshold	Instruction, Slayt presentation	
12. Week	Population Inversion	Instruction, Slayt presentation	
13. Week	Laser Output	Instruction, Slayt presentation	
14. Week	Properties of Lasers	Instruction, Slayt presentation	
15. Week	Review	Instruction, Slayt presentation"	
16. Week	Final Exam	Written Exam	

RESOURCES

Recommended Sources
Lasers, J.Wilson and J.F.B. Hawkes, ISBN-13: 978-0135237052
LASERS, A. E. Siegman, Stanford University, University Science Books, 1986, ISBN-13: 978-0935702118
Principles of Lasers, Orazio Svelto, ISBN-13: 978-1441913012

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Midterm: 1 %30 Project: 1 %30 Final: 1 %40 TOTAL : 100		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	35
Assignment 1	1	10
Total	2	45
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	55
Total	1	55
Contribution Of In-Term Studies To Overall Grade		45
End-Term Studies		55
Total		100

COURSE CATEGORY

Course Category	Percentage

Area of Specialization Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5	DK6	DK7
PY1	4	4	4	4	4	4	4	4
PY2	3	3	3	3	3	3	3	3
PY3	4	4	4	4	4	4	4	4
PY4	5	5	5	5	5	5	5	5
PY5	3	3	3	3	3	3	3	3
PY6	4	4	4	4	4	4	4	4
PY7	5	5	5	5	5	5	5	5
PY8	2	2	2	2	2	2	2	2
PY9	3	3	3	3	3	3	3	3
PY10	2	2	2	2	2	2	2	2
PY11	4	4	4	4	4	4	4	4
PY12	4	4	4	4	4	4	4	4
PY13	3	3	3	3	3	3	3	3
PY14	2	2	2	2	2	2	2	2
PY15	3	3	3	3	3	3	3	3

*DK = Course's Contrubution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

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ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Assignment 1	2	15	30
Class Hours (14 weeks)	14	3	42
Presentation/Seminar	1	2	2
Research&Project	3	15	45
Mid Term Exam 1	1	2	2
Mid Term Exam Preparation	1	20	20
Final Exam Preparation	1	26	26
		Total Workload	169
		Total Workload / 25.5 (s)	6.63
		ECTS Credit of the Course	7